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REMARKS

Claims 1-21 were pending in the subject application. Applicants have hereinabove amended claims 1, 2 and 14-18, canceled claims 3-13 and added new claims 22-33. Accordingly, claims 1, 2 and 14-33 are presented for examination.

Applicants maintain that no new matter is presented by this amendment. Accordingly, applicants respectfully request that this Amendment be entered.

Objection To The Drawings

In Section 2 of the October 4, 2001 Office Action, the drawings were objected to under 37 C.F.R. §1.83(a).

The Examiner stated that the drawings must show every feature of the invention specified in the claims. The Examiner further stated that the "a reading taken" in claims 16-18 and the "a directional component" in claims 17 and 18 must be shown or the feature(s) canceled from the claim(s). The Examiner also stated that no new matter should be entered.

Claims 16-18 have been amended hereinabove. Applicants maintain that all features of the claimed invention recited in amended claims 16-18 are shown in the drawings.

Accordingly, applicants respectfully request that the Examiner reconsider and withdraw the objection to the drawings under 37 C.F.R. §1.83(a).

Objection To The Abstract of the Disclosure

In Section 3 of the October 4, 2001 Office Action, the Examiner stated that applicants are reminded of the proper language and format for an abstract of the disclosure. The Examiner also stated that, with respect to the present abstract, the abstract should be limited to a single paragraph on a separate sheet.

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The abstract of the disclosure has been amended hereinabove. A clean copy of the amended abstract is attached hereto as Exhibit A. A marked-up version of the abstract is attached hereto as Exhibit B.

Applicants respectfully request that the Examiner reconsider and withdraw the objection to the abstract of the disclosure.

Objection To The Claims

In Section 5 of the October 4, 2001 Office Action, the Examiner objected to claims 1, 12 and 14 as having informalities.

The Examiner stated that claim 1 in line 6, the "a particle size distribution" should be changed to --the particle size distribution--.

The Examiner also stated that claim 12 in line 4, "to the" should be canceled.

The Examiner further stated that claim 14 in line 5, the "a particle size distribution" should be changed to --the particle size distribution--.

Claims 1 and 14 have been amended hereinabove. Since claim 12 has been canceled hereinabove, the objection with regard to claim 12 is now moot.

Applicants respectfully request that the Examiner reconsider and withdraw the objection to claims 1, 12 and 14.

Rejection under 35 U.S.C. §112, second paragraph

In Section 7 of the October 4, 2001 Office Action, claims 14 and 16-18 were rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard

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as the invention.

The Examiner stated that claim 14 recites the limitation "the amount of light scattered" in line 3 and "the measurement zone" in line 6. The Examiner further stated that there is insufficient antecedent basis for this limitation in the claim.

The Examiner also stated that claims 16-18 are indefinite. The Examiner queried what "a reading" means.

The Examiner stated that in claims 17 and 18, the "a detection means" is unclear whether it is "first detection means" or "second detection means". The Examiner further stated that applicants should clarify the limitation.

In response, without conceding the correctness of the Examiner's position but solely to advance the prosecution of the subject application, applicants have hereinabove amended claims 14 and 16-18. Applicants maintain that the claim amendments do not narrow the scope of the claimed invention, but rather place the claims in better form for examination.

Applicants respectfully submit that amended claims 14 and 16-18 clearly recite the subject matter applicant regards to be the invention. Accordingly, applicants respectfully request that the Examiner reconsider and withdraw the rejection of claims 14 and 16-18 under 35 U.S.C. § 112, second paragraph.

Rejection Under 35 U.S.C. § 102(b)

In Section 9 of the October 4, 2001 Office Action, claims 1, 4-6, 11 and 14 are rejected under 35 U.S.C. §102(b) as purportedly being anticipated by U.S. Patent No. 5,185,641 to Igushi et al. (hereinafter "Igushi '641").

The Examiner stated that, with regard to claims 1 and 14, Igushi

`641 teaches a particle size distribution analysis apparatus comprising a sample measurement zone or a sample cell contained a sample of particles, a light emitting means provided a light incident or a single wavelength light upon the measurement zone, and at least a first detection means measured light levels at particular scattering angles and output signals to a computation means enabling a particle size distribution of particles contained within the sample to be determined, wherein the computation means calculates the particle size distribution taking into account reflections by the measurement zone of light scattered off the particles.

The Examiner also stated that, regarding claims 4-6, Igushi `641 discloses that the first detection means comprises a large angle detector, wherein the large angle detector is situated substantially in the range 90 degrees to 0 degree from the axis of a beam of light emitted.

The Examiner also stated that, with regard to claim 11, it is inherent in Igushi `641 that the angle at which the second detection means is inclined relative to a beam of the light emitted from the light emitting means is equal to 180 degrees minus (-) the angle at which the first detection means is inclined relative to the beam of light.

Applicants maintain that the claimed invention cannot be anticipated by Igushi `641 because it fails to disclose each and every element of the claimed invention.

As understood by applicants, Igushi '641 relates to an apparatus for measuring particle size distribution. Igushi '641 appears to disclose (at col. 7, lines 18 to 34) use of transmission and obscuration measurements in improving the accuracy of a particle size distribution calculation. However, obscuration measurement, and compensation, is well known and moreover is not the invention

claimed in the subject application.

An obscuration measurement is taken in the presence of particle distribution in order to account for a reduction in transmission of light through the measurement zone as the particle concentration increases. The result of this increased attenuation is that the measured scattering from the particles, including errors in the background, is reduced.

Such an obscuration measurement is usually combined with a transmission measurement through the measurement zone, taken when the measurement zone is empty of particles, to account for scattering and reflections from surfaces of the measurement zone to provide a background scattering correction.

However, as the transmission measurement is taken in an absence of particles, there is no attempt to correct for light that has been scattered from a particle and subsequently reflected from a surface of the measurement zone.

Both the obscuration measurement and the transmission measurement treat each data point as being independent of each other data point and therefore result in vector quantity reduced by (obscuration) a linear scaling factor (transmission) to correct the measured scattered intensities. However, there are also additional effects due to light scattered from particles, and subsequently reflected from surfaces of the measurement cell, that are not data point independent, for example multi-component reflections, i.e. the effects do not result in a vector scaling factor that can be applied to the individual measured scattered intensities but result in biases to the measured experimental particle size distributions that are interdependent upon multiple angular position measurements of the scattered light.

(The claimed invention recited in amended independent claims 1 and

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14 provides for calculating particle size distribution taking into account reflections by the measurement zone of light that has previously been scattered by the particles, and thereby improves the accuracy of the calculations and obtains a more accurate prediction of the particle size distribution. Igushi `641 simply does not disclose or suggest such feature.

Since claims 4-6 and 11 have been canceled hereinabove, the rejection with regard to claims 4-6 and 11 is now moot.

Accordingly, applicants respectfully request that the Examiner reconsider and withdraw the rejection of claims 1, 4-6, 11 and 14 under 35 U.S.C. § 102(b).

Rejection Under 35 U.S.C. § 103(a)

In Section 11 of the October 4, 2001 Office Action, claims 2, 3, 7-10, 12, 13 and 15-21 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Igushi `641.

The Examiner stated that, regarding claims 2, 3, 7-10 and 15-18, Igushi `641 discloses a second detection means which is a back scatter detector situated substantially at an obtuse angle in the range 90 degrees to 180 degrees from the axis of a beam of light emitted. The Examiner further stated that Igushi `641 discloses the claimed invention except for computation means for using to modify readings taken from the first detection means based upon reading taken from the second detection means to take into account reflection or computation means for using to modify readings taken from the second detection means based upon reading taken from the first detection means to take into account reflections.

The Examiner alleged that it would have been an obvious matter of design choice to include in Igushi `641 computation means for using to modify readings taken from the first detection means

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based upon reading taken from the second detection means to take in to account reflections or from the second detection means based upon reading taken from the first detection means, since applicants have not disclosed that these limitations solve any stated problem or is for any particular purpose and it appears that the invention would perform equally well with figures 1-5 of Igushi `641 for the purpose of measuring accurately data of particle size distribution is readings taken from the each of photosensors or detectors and low cost system.

The Examiner stated that, with regard to claims 12, 13 and 19-21, Igushi `641 discloses a plurality of first and second detection which means are inclined symmetrically relative to the measurement zone.

Applicants maintain that Igushi `641 does not render obvious the claimed invention.

As discussed above, the claimed invention recited in amended independent claim 14, from which claims 15-21 depend, provides for calculating particle size distribution taking into account reflections by the measurement zone of light that has previously been scattered by the particles.

Igushi `641 simply does not disclose or suggest such feature. Therefore, the claimed invention is patentable over Igushi `641.

Since claims 2, 3, 7-10, 12 and 13 have been canceled hereinabove, the rejection with regard to claims 2, 3, 7-10, 12 and 13 is now moot.

Accordingly, applicants respectfully request that the Examiner reconsider and withdraw the rejection of claims 2, 3, 7-10, 12, 13, and 15-21 under 35 U.S.C. §103.

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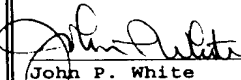
In view of the amendments to the claims and remarks hereinabove, applicants maintain that claims 1, 2 and 14-33 are now in condition for allowance. Accordingly, applicants earnestly solicit the allowance of claims 1, 2 and 14-33.

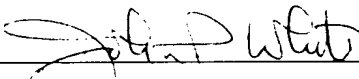
If a telephone interview would be of assistance in advancing prosecution of the subject application, applicants' undersigned attorney invites the Examiner to telephone him at the telephone number provided below.

If a petition for an extension of time is required to make this response timely, this paper should be considered to be such a petition, and the Commissioner is authorized to charge the requisite fees to our Deposit Account No. 03-3125.

No fee, other than the \$18.00 fee for the extra claim, is deemed necessary in connection with the filing of this Amendment. However, if any additional fee is required, authorization is hereby given to charge the amount of any such fee to Deposit Account No. 03-3125.

Respectfully submitted,

I hereby certify that this correspondence is being deposited this date with the U.S. Postal Service with sufficient postage as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231.	
 John P. White Reg. No. 28,678	11/3/02 Date


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1. (Amended) A particle size distribution analysis apparatus comprising a sample measurement zone [adapted to define] defining a sample of particles, a light emitting means [adapted to provide] for providing a source of light incident upon the sample measurement zone, and at least a first detection means [adapted to measure] for measuring light levels in the apparatus at particular scattering angles and output a signal to a computation means for calculating said particle size distribution (enabling [a] the particle size distribution of particles) contained within said sample to be determined, wherein said computation means [is adapted, in use, to calculate] calculates, in use, said particle size distribution taking into account reflections by said measurement zone of light that has previously been scattered [off] by said particles.

2. (Amended) An apparatus according to claim 1 wherein there is provided a second detection means and said computation means [is adapted, in use, to modify] modifies, in use, [readings] measurements taken from said first detection means based upon [readings] measurements taken from said second detection means to take in to account reflections.

14. (Amended) A method of improving the accuracy of a particle size distribution calculation performed by illuminating a sample with light from a light emitting means and [taking readings of the] measuring an amount of light scattered by the sample comprising providing at least a first detection means and calculating [a] the particle size distribution taking into account reflections by [the] a measurement zone of light that has previously been scattered [from] by the particles.

15. (Amended) A method according to claim 14 which comprises

providing a second detection means and modifying [readings] measurements taken from said first detection means by [readings] measurements taken from said second detection means.

16. (Amended) A method according to claim 15 in which a [reading] measurement taken from said second detection means is modified by [readings] measurements taken by said first detection means.

17. (Amended) A method according to claim 15 which comprises compensating a [reading] measurement from one of the first or second [a] detection means detecting light scattered having a directional component towards said light emitting means with a [reading] measurment from the other of the first or second [a] detection means detecting scattered light having no directional component toward said light emitting means.

18. (Amended) A method according to claim 15 which comprises compensating a [reading] measurement from one of the first or second [a] detection means detecting light having no directional component towards said light emitting means with a [reading] measurement from the other of the first or second [a] detection means detecting scattered light having a directional component toward said light emitting means.